UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,701	11/16/2000	Andrew Wolfe	2926	8544

7590   03/20/2003

Susan Yee Esq
Carr & Ferrell LLP
2225 E Bayshore Road Suite 200
Palo Alto, CA   94303

EXAMINER
SAJOUS, WESNER

ART UNIT	PAPER NUMBER
2676	

DATE MAILED: 03/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/715,701	WOLFE, ANDREW
	Examiner	Art Unit
	Wesner Sajous	2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-27_ is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) _18-21 and 23-27_ is/are allowed.

6) ☒ Claim(s) _1-3,5,6 and 8-13_ is/are rejected.

7) ☒ Claim(s) _4, 7_ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _16 November 2000_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

     If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☐ All b) ☐ Some * c) ☐ None of:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

     a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _3 & 5_ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Remark

1.   This Office Action is in response to application serial number 09/715,701 filed on

11/16/2000. Claims 1-27 are presented for examination.

Information Disclosure Statement

2.   The Examiner acknowledges receipt of the information disclosure statement

(IDS) dated 1/12/2001 and 4/6/2001 under CFR 1.97. The references attached to such

information have been considered and a signed copy is attached.

Claim Objections

3.   Claims 1, 8-9, 11-12, and 14-17 are objected to because of the following

informalities:

a.   In claim 1, line 6, the Applicant, to be consistent in language, is suggested to

replace "*boundary*" with --*bounding*--. Appropriate correction is required.

b.   Claim 8 is objected to because it recites the limitation "comparing locations of

pixels to be drawn by the first graphics primitive with locations of pixels... by the second

graphics primitive", in lines 3-4 that is unclear. This mention is deemed impractical,

because, in general, graphics primitives are composed of pixels and correspond to

objects in a scene that can be processed to render an image. They can be drawn on a

display plane using a graphics device; however, they cannot be used as instruments to

draw the pixels' locations. Therefore, it is not clear how the locations of pixels [will be]

drawn by the graphics primitives. As best understood, the Examiner takes the position

that the claim should recite "*comparing locations of pixels of the first graphics*

primitive with locations of pixels of the second graphics primitive." Appropriate

correction is required.

c.   Claim 9 recites the same problem as claim 8 and, it is, therefore, objected to for

the same reason as claim 8. Appropriate correction is required.

d.   In light of claim 8, claim 11, at line 3, should recite "*comparing locations of*

pixels of the first graphics primitive with locations of pixels to be used as source

operands by the second graphics primitive." Appropriate correction is required.

e.   In light of claim 8, claim 12, at lines 4-6, should recite "*calculating a second*

bounding box which surround the pixels to be used as source operands and by

the second graphics primitive." Appropriate correction is required.

f.   In claim 12, line 6, the claim recites the limitation "determining whether there is

dependfirst and ...overlap" which includes language or spelling error. This error

appears to be inadvertent. As best understood by the Examiner, the limitation is

rewritten as: "determining whether there is dependency if the first and ... overlap.

Appropriate correction is required.

h.   The limitation at lines 8-9 in claim 14 is objected to for the same reason cited

above for claim 8. Appropriate correction is required.

i.   Claims 15-17 recite the same problem as claim 14 and, they are, therefore,

objected to for the same reason as claim 14. Appropriate correction is required.

j.   With regard to claim 22, it appears that the Applicant inadvertently recites the

claim to depend from claim 3, because the detecting step has not being defined in claim

3 or its parent. The Examiner believes that claim 22 should instead be a dependent of

claim 20. Correction/clarification is required.

Specification

4.   The disclosure is objected to because it fails to clearly described how a first

comparator is "generating a first resultant bit", as recited in claim 14, line 9. The

specification only provides that a bit k in the dependence vector is calculated (see

specification's page 25), and that valid bits are cleared in the destination reservation

station in correspondence with completed primitive (see specification's page 26).

However, it provides no relation between a first comparator and a first resultant bit.

Accordingly, the Applicant is suggested to amend the specification so that it is in parallel

with the claim. Clarification is required.

Further, the specification fails to provide any connection between "a second

comparator for ... second resultant bit", as recited in claim 15, no connection between

"a third comparator for ... third resultant bit", as recited in claim 16, and no suggestion of

"a logic OR gate for receiving the first, second, and third resultant bits ... second

graphics primitives" as called for in claim 17.   Therefore, the Applicant is required to

amend the specification so that it meets the claimed features as recited in claims 15-17.

Clarification is required.

Drawings

5.   The drawings are objected to under 37 CFR 1.83(a). The drawings must show

every feature of the invention specified in the claims. Therefore, the "first comparator"

of claim 14, the second comparator" of claim 15, the "third comparator" of claim 16, and

the "logic OR gate for receiving the first, second, and third resultant bits ... primitives" as

recited in claim 17 must be shown or the feature(s) canceled from the claim(s). No new

matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the

Office action to avoid abandonment of the application. The objection to the drawings

will not be held in abeyance.

6.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

because they do not include the following reference sign(s) mentioned in the

description: the single destination region 701 and the two source regions 702 and 703.

A proposed drawing correction or corrected drawings are required in reply to the Office

action to avoid abandonment of the application. The objection to the drawings will not

be held in abeyance.

7.   The drawings are objected to under 37 CFR 1.83(a) because they fail to show

the "processing/executing primitive D"; "processed/executed P"; "candidate primitive P";

"dispatch primitive D"; "the function depend (P, D)" "SP", "DP", "SD, and "DD" as

described in the specification, starting at page 15, paragraph 2, and ended at paragraph

2 of page 16. Any structural detail that is essential for a proper understanding of the

disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed

drawing correction or corrected drawings are required in reply to the Office action to

avoid abandonment of the application. The objection to the drawings will not be held in

abeyance.

Claim Rejections - 35 USC § 102

8.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9.   Claims 1-3, and 5-6 are rejected under 35 U.S.C. 102(e) as being anticipated by

Dye, US Pat. No. 6,108,014.

        Considering claim 1, Dye, at fig. 32, discloses a method for determining

dependencies (*e.g., collisions or unions*) between a first graphics primitive (*i.e., a first

object*) and a second graphics primitive (*e.g., a second object*), see col. 66, lines 35-37,

and lines 43-60)), the method comprises calculating a first bounding box for the first

graphics primitive (*e.g., determining bounding box of each object, see fig. 32, item 800,

see col. 67, lines 6-8, see also col. 66, lines 35-36 & 43-45*); calculating a second

bounding box for the second graphics primitive (*see fig. 32, item 800, see col. 67, lines

6-8, see also col. 66, lines 35-36 & 43-45*); and determining (e.g., at step 802 of fig. 32)

whether the first bounding box and the second bounding box overlap (*e.g., intersect*), wherein a dependency (*e.g., a collision or union*) is detected if the [bounding] boxes overlap (*or intersect*), *see col. 66, lines 43-50, and col. 67, lines 8-23. See also fig. 29 as the characteristic for when the two boxes overlap*)).

In claim 2, Dye discloses the first bounding box (*e.g., the outer bounds of the first object in X, Y, Z space, see col. 67, lines 6-8*) [inherently] surrounds a source operand of the first graphics primitive (*wherein the source operand is understood to represent the Z memory or Z values of X, Y area of box 1as implied to in the depiction at col. 67, lines 15-23*).

In claim 3, Dye discloses the second bounding box (*e.g., the outer bounds of the second object in X, Y, Z space, see col. 67, lines 6-8*) [inherently] surrounds a destination operand of the second graphics primitive (*wherein the destination operand is understood to represent the window workspace area where the second object will be rendered, as suggested at col. 67, lines 50-56*).

In claim 5, the claimed "first bounding box surrounds a destination operand of the first graphics primitive" is inherent in the disclosure of Dye because it is suggested that each object will be rendered in a workspace area. See *col. 67, lines 50-56*.

As per claim 6, the claimed "second bounding box surrounds a destination operand of the second graphics primitive" is inherent in the disclosure of Dye because it is suggested that each object will be rendered in a workspace area. See *col. 67, lines 50-56*.

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

11.   Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Dye, US Pat. No. 6108014.

Regarding claim 8, Dye, at fig. 32, discloses a method for determining whether a

dependency (*e.g., intersection or union of the bounding boxes*) exists between a first

graphics primitive (*i.e., a first object*) and a second graphics primitive (*e.g., a second

object*), as a function of comparing the [two objects and/or bounding boxes]. See fig. 8,

items 800, and 802, and col. 66, lines 43-60.

Dye fails to explicitly explain that the locations of pixels of each primitive.

However, since Dye clearly discloses the rendering of polygons or triangle

objects with X, Y coordinate locations as applied in the field of computer graphics

display (see col. 67, lines 42-55), and compare X, Y, Z space locations of each box to

enable each X, Y pixel in the union (or dependency detection) of the bounding boxes

(see col. 67, lines 1-34), it would have been obvious that the X, Y, Z space including the

X, Y coordinates can be considered as the locations of the pixels. Thus, the invention

of Dye uses and compares pixels locations during the detection of union or

dependency, because in computer graphics, pixel locations need to be determined in

order to draw primitives (e.g., windows, or objects, or triangles, or polygons, or rectangles) and their coordinates.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to modify the invention of Dye to include the comparison of locations of pixels of a first and a second graphics primitives to determine if dependency exist between them. Such modification would allow the system of Dye to store video data in different bit per pixel formats for display on a video monitor. See Dye col. 2, lines 61-63.

As per 9, claim Dye, at fig. 32, discloses the step of comparing comprising calculating a first bounding box which surrounds the pixels of the first graphics primitive (*as met by step 800*); calculating a second bounding box which surrounds the pixels of the first graphics primitive (*as met by step 800*), *see col. 67, lines 6-8, see also col. 66, lines 43-45*); and comparing the first bounding box with the second bounding box (*as met by step 802 of fig. 32, see col. 67, lines 8-13*).

In claim 10, Dye discloses a dependency exists (*e.g., intersection or union of the bounding boxes*) between the first and second graphics primitives if the [bounding] boxes overlap (*or intersect), see col. 67, lines 8-23*)).

The invention of claim 11 substantially recites the underlying steps performed by the method of claim 8. As the various elements of claim 8 have been shown to be obvious over the teachings of Dye, it is readily apparent the method disclosed by the applied prior art performs the recited underlying functions. As such the limitations recited in claim 11 are rejected for the same reason and rationale given above for claim

8. The Applicant should duly note that the source operand characterizes the Z memory or Z values of X, Y area of box 1 or 2 as implied to in the depiction at col. 67, lines 15-23. The Z memory, as applied in Dye characterizes the display memory for box 2 of the second object. Thus, it can be used as the source operand for the locations of pixels by the second object (or the second graphics primitive).

As per 12, claim Dye, at fig. 32, discloses the step of comparing comprising calculating a first bounding box which surrounds the pixels of the first graphics primitive (*as met by step 800*); calculating a second bounding box which surrounds the pixels to be used as source operands *(see claim 11 rejection above)* and by the second graphics primitive *(as met by step 800, see col. 67, lines 6-8, see also col. 66, lines 43-45)*; and determining whether there is dependency if the first and ... overlap (*as met by step 802 of fig. 32, see col. 67, lines 8-23))*.

Claim 13 is rejected for the same reason as claim 10.

Allowable Subject Matter

12.   Claims 18-21, and 23-27are allowed over the prior art.

13.   Claims 4, and 7, and 14-17 would be allowable if overcome the minor informalities objections stated above.

Reasons for Indicating Allowable Subject Matters

14.   The present application has been thoroughly reviewed. Upon searching a variety of databases, the Examiner respectfully submits that the prior art of record (see PTO-

892 Form) fail to teach or suggest a method for parallel processing of a plurality of 3D primitives in an out of order sequence comprises processing at least two of the primitives in order at the same time, where that at least two of the primitives have no dependency and wherein a first primitive in the at least two is completely processed before the others; *detecting a dependency between a next primitive to be processed from the plurality in the queue and the primitives in the at least two which have not yet been completely processed; and* _skipping the next primitive to be processed from the plurality in the queue and processing a subsequent primitive from the plurality in the queue, wherein no dependency is detected between the subsequent primitive and the primitives in the at least two which have not yet been completely processed_, as recited in claims 18 [and 19 by dependency].

Claims 20-27 recite in part the underlying features of claims 19-20, and they are allowed over the prior art for at least the same reasons as claims 19-20.

It is also respectfully submitted that the reference to Dye, albeit it is pertinent to the applicant's invention, it fails to teach or suggest an apparatus for detecting dependencies comprises a destination reservation station for storing a destination bounding box for the first graphics primitive a source reservation station for storing a source location for the first graphics primitive (*e.g., window or object ID#1*); and a comparator for comparing the destination bounding location for the first graphics primitive with location of pixels of the second graphics primitive, and generating a first resultant bit, as recited in claim 14.

Claims 15-17 recite the elements of claim 14, and are allowed for the same

reasons.

Claims 4, and 7 are allowed because the prior art fail to teach "a write after read

dependency is detected if the second bounding box overlaps the first bounding box" as

recited in claim 4; and "a write after write dependency is detected if the second

bounding box overlaps the first bounding box" as recited in claim 7.

Conclusion

15.   The prior art made of record, considered pertinent to applicant's disclosure, and

are not relied upon herein, are as recited in the attached PTO-892 form.

Any response to this action should be mailed to:
                                    Box

          Commissioner of Patents and Trademarks

          Washington, DC 20231

or faxed to:

          (703) 872-9314, (for technology center 26000 only)

Or:

          (703) 308-5359 for informal or draft communications, please label "PROPOSED"

or   DRAFT")

Hand-held delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,

Arlington, VA, 6th floor (receptionist).

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Wesner Sajous whose telephone number is (703) 308-

5857. The examiner can be reached on Mondays thru Thursdays and on alternate

Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Supervisor, Matthew Bella, can be reached at (703) 308-6829. The fax

phone number for this group is (703) 308-6606.

Wesner Sajous -WS-

3/07/03